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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/724,747      | 12/02/2003  | Nobuo Yodoshi        | 07057.0058          | 2091             |

22852 7590 04/18/2007  
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| EXAMINER |
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HAILEY, PATRICIA L

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

1755

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE  | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS                               | 04/18/2007 | PAPER         |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

|                              |                                       |                                       |  |
|------------------------------|---------------------------------------|---------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/724,747  | <b>Applicant(s)</b><br>YODOSHI, NOBUO |  |
|                              | <b>Examiner</b><br>Patricia L. Hailey | <b>Art Unit</b><br>1755               |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 January 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/02/03; 06/22/05</u> .                                      | 6) <input type="checkbox"/> Other: _____                          |

***Election/Restrictions***

1. Applicant's election without traverse of Group I, claims 1-22, in the reply filed on January 19, 2007, is acknowledged.
2. Claim 23 is hereby withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected membrane electrode assembly, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on January 19, 2007.

Applicants' election without traverse of Group I, claims 1-22, in the reply filed on January 19, 2007, is duly noted. Claim 23 is withdrawn from consideration by the Examiner.

***Priority***

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicants' Priority Document or Documents was or were filed on December 2, 2003.

***Claim Objections***

4. ***Claims 3 and 4 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.***

Claims 3 and 4 are rejected because claim 3 appears to fail to further limit the subject matter of claim 1. Claim 3 recites the limitation that the agglutinates are reduced in the reducing step before the second step is performed, which is also recited in the last two lines of claim 1.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. ***Claims 17-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.***

The word "low" in claims 17 and 22 (specifically, the phrase "low content of impurities") is a relative term which renders the claims indefinite. The term/phrase is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year, prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

**8. *Claims 1-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Denton et al. (U. S. Patent No. 5,716,437).***

Denton et al. disclose an electrode comprising an ink comprising a mixture of one or more catalyst materials (selected from the platinum group metals, gold, silver or a base metal or base metal oxide, or an alloy or mixture comprising one or more of these metals, preferably supported on a conductive substrate such as carbon, see col. 6, lines 13-21) and one or more proton-conducting polymers (considered to read upon the limitation "solvent" in **claim 1**), and a method of preparing said electrode by applying the ink to a substrate via a variety of methods, such as vacuum filtration deposition (considered to read upon the "filtration step" in, for example, **claim 8**, and therefore the "reducing step" in **claim 1**) or rolling. Denton et al. also disclose a membrane electrode assembly comprising one or more of said electrodes. See col. 6, lines 31-40 of Denton et al.

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Denton et al. also disclose an MEA comprising a printing ink and a method for preparing the same, said method comprising applying said printing ink directly onto the surface of a polymer electrolyte membrane. See col. 7, lines 13-45 of Denton et al.

Because Denton et al. is silent regarding the presence of impurities in the catalyst ink, Applicants' claim limitations with respect to the "agglutinates" and to the "impurities that cause formation of agglutinates" is considered inherently encompassed by Denton et al.

Further, because Denton et al. do not recite the presence of "at least one of vanadium (V), iron (Fe), and nickel (Ni)", Applicants' claim limitations regarding these "impurities" and their respective amounts (i.e., **claims 18, 19, 21, and 22**) are also considered inherently encompassed by Denton et al. Additionally, Applicants' claim recitation "equal to or lower than" is considered to include amounts of zero (0) percent by weight.

**9. Claims 1-7, 9-15, and 17-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Sompalli et al. (U. S. Patent No. 6,254,736).**

Sompalli et al. teach a method of making a membrane electrode assembly by applying a catalyst slurry (often referred to as an ink, see col. 6, lines 50-53) to a porous substrate support (col. 6, lines 6-10).

The catalyst slurry comprises an ionomer, with particles of electrically conductive material, typically carbon, and particles of catalyst. The catalyst support is typically the

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electrically conductive material, and the catalyst is typically a metal. See col. 6, line 50 to col. 7, line 20 of Sompalli et al.

The catalyst slurry is spread on a porous substrate (e.g., PTFE) in one or more layers, and subsequently dried. The catalyst layers are then bonded to a polymer electrolyte membrane by hot-pressing (considered to read upon the claimed “crushing step” in, for example, **claim 7**, and therefore the “reducing step” in **claim 1**). See col. 7, lines 21-67 of Sompalli et al., as well as col. 8, lines 1-20.

Because Sompalli et al. is silent regarding the presence of impurities in the catalyst ink, Applicants' claim limitations with respect to the “agglutinates” and to the “impurities that cause formation of agglutinates” is considered inherently encompassed by Sompalli et al.

Further, because Sompalli et al. do not recite the presence of “at least one of vanadium (V), iron (Fe), and nickel (Ni)”, Applicants' claim limitations regarding these “impurities” and their respective amounts (i.e., **claims 18, 19, 21, and 22**) are also considered inherently encompassed by Sompalli et al. Additionally, Applicants' claim recitation “equal to or lower than” is considered to include amounts of zero (0) percent by weight.

In view of these teachings, Sompalli et al anticipate claims 1-7, 9-15, and 17-22.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia L. Hailey whose telephone number is (571) 272-1369. The examiner can normally be reached on Mondays-Fridays, from 7:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Patricia L. Hailey/plh  
Examiner, Art Unit 1755  
April 10, 2007

  
J. A. LORENZO  
SUPERVISORY PATENT EXAMINER